

WHAT IS CLAIMED IS:

1. An arithmetic performance attribution method for determining portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , comprising the steps of:

5 (a) determining coefficients $c_1 = A$, and $c_2 = \left[\frac{R - \bar{R} - A \sum_{jt} a_{jt}}{\sum_{jt} a_{jt}^2} \right]$,

where A has any predetermined value, a_{jt} is a component of active return, the summation over index j is a summation over all components a_{jt} for period t ,

10 $R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1$, $\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{jt} for each period t satisfy $\sum_j a_{jt} = R_t - \bar{R}_t$; and

(b) determining the portfolio performance as $R - \bar{R} = \sum_{it} [c_1 a_{it} + c_2 a_{it}^2]$, where the summation over index i is a summation over all the terms $(c_1 a_{it} + c_2 a_{it}^2)$ for period t .

15 2. The method of claim 1, wherein A is

$$A = \frac{1}{T} \left[\frac{(R - \bar{R})}{(1 + R)^{1/T} - (1 + \bar{R})^{1/T}} \right], \text{ where } R \neq \bar{R},$$

or for the special case $R = \bar{R}$:

$$A = (1 + R)^{(T-1)/T}.$$

20 3. The method of claim 1, wherein $A = 1$.

4. An arithmetic performance attribution method for determining portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , comprising the steps of:

25 (a) determining a set of coefficients c_k , including a coefficient c_k for each positive integer k ; and

- (b) determining the portfolio performance as $R - \bar{R} = \sum_{it} \sum_{k=1}^{\infty} c_k a_{it}^k$, where a_{it} is a component of active return for period t , the summation over index i is a summation over all components a_{it} for period t , $R = [\prod_{t=1}^T (1 + R_t)] - 1$, $\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{it} for each period t satisfy $\sum_i a_{it} = R_t - \bar{R}_t$, where the summation over index i is a summation over all components a_{it} for said each period t .

5. The method of claim 4, wherein A is

$$A = \frac{1}{T} \left[\frac{(R - \bar{R})}{(1 + R)^{1/T} - (1 + \bar{R})^{1/T}} \right], \text{ where } R \neq \bar{R},$$

- 10 or for the special case $R = \bar{R}$:

$$A = (1 + R)^{(T-1)/T}.$$

6. The method of claim 4, wherein $c_k = 0$ for each integer k greater than two,

$$c_1 = A, \quad c_2 = \left[\frac{R - \bar{R} - A \sum_{jt} a_{jt}}{\sum_{jt} a_{jt}^2} \right], \text{ } A \text{ has any predetermined value, the summation over}$$

- 15 index j is a summation over all components a_{jt} for period t , $R = [\prod_{t=1}^T (1 + R_t)] - 1$, $\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{jt} for each period t satisfy $\sum_j a_{jt} = R_t - \bar{R}_t$.

7. A computer system, comprising:

- 20 a processor programmed to perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining coefficients $c_1 = A$, and

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$$c_2 = \left[\frac{R - \bar{R} - A \sum_{jt} a_{jt}}{\sum_{jt} a_{jt}^2} \right],$$

where A has any predetermined value, a_{jt} is a component of active return, the summation over index j is a summation over all components a_{jt} for period t , R is

$$5 \quad R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1, \quad \bar{R} \text{ is } \bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1,$$

R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{jt} for each period t satisfy $\sum_j a_{jt} = R_t - \bar{R}_t$, and determining the portfolio performance as $R - \bar{R} = \sum_{it} [c_1 a_{it} + c_2 a_{it}^2]$, where the summation over index i is a summation over all the terms $(c_1 a_{it} + c_2 a_{it}^2)$ for period t ; and

10 a display device coupled to the processor for displaying a result of the arithmetic performance attribution computation.

8. The computer system of claim 7, wherein A is

$$A = \frac{1}{T} \left[\frac{(R - \bar{R})}{(1 + R)^{1/T} - (1 + \bar{R})^{1/T}} \right], \text{ where } R \neq \bar{R},$$

15 or for the special case $R = \bar{R}$:

$$A = (1 + R)^{(T-1)/T}.$$

9. A computer system, comprising:

20 a processor programmed to perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining a coefficient c_k for each integer k greater than zero, and determining the portfolio performance as $R - \bar{R} = \sum_{it} \sum_{k=1}^{\infty} c_k a_{it}^k$, where a_{it} is a component of active return for period t , the summation over index i is a summation over all components a_{it} for period t , $R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1$,

$\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{it} for each period t satisfy $\sum_i a_{it} = R_t - \bar{R}_t$, where the summation over index i is a summation over all components a_{it} for said each period t ; and

- 5 a display device coupled to the processor for displaying a result of the arithmetic performance attribution computation.

10. The computer system of claim 9, wherein $c_k = 0$ for each integer k greater than

two, $c_1 = A$, $c_2 = \left[\frac{R - \bar{R} - A \sum_{jt} a_{jt}}{\sum_{jt} a_{jt}^2} \right]$, A has any predetermined value, the summation

- 10 over index j is a summation over all components a_{jt} for period t , $R = [\prod_{t=1}^T (1 + R_t)] - 1$,

$\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{jt} for each period t satisfy $\sum_j a_{jt} = R_t - \bar{R}_t$.

11. A computer readable medium which stores code for programming a processor to
15 perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1

to T , by determining coefficients $c_1 = A$, and $c_2 = \left[\frac{R - \bar{R} - A \sum_{jt} a_{jt}}{\sum_{jt} a_{jt}^2} \right]$, where A has any

predetermined value, a_{jt} is a component of active return, the summation over index j

is a summation over all components a_{jt} for period t , $R = [\prod_{t=1}^T (1 + R_t)] - 1$,

- 20 $\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , and the components a_{jt} for each period t satisfy $\sum_j a_{jt} = R_t - \bar{R}_t$, and

12. The medium of claim 11, wherein A is

$$A = \frac{1}{T} \left[\frac{(R - \bar{R})}{(1 + R)^{1/T} - (1 + \bar{R})^{1/T}} \right], \text{ where } R \neq \bar{R},$$
$$A = (1 + R)^{(T-1)/T}.$$

20 14. The medium of claim 13, wherein $c_k = 0$ for each integer k greater than two,

$$c_1 = A, \quad c_2 = \left[\frac{R - \bar{R} - A \sum_{j_i} a_{j_i}}{\sum_{j_i} a_{j_i}^2} \right], \quad A \text{ has any predetermined value, the summation over}$$

index j is a summation over components a_{jt} for period t , $R = [\prod_{t=1}^T (1 + R_t)] - 1$,

$$\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1, \quad R_t \text{ is a portfolio return for period } t, \quad \bar{R}_t \text{ is a benchmark return for}$$

period t , and the components a_{jt} for each period t satisfy $\sum_j a_{jt} = R_t - \bar{R}_t$ where the summation over index j is a summation over all the components a_{jt} for said each period t .

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